

What is claimed is:

1. A weight bearing element comprising:
5 a substantially flat web; and
at least one chord defining a perimeter having a polygonal cross-sectional shape with
at least 5 mutually non-coplanar sides, at least two of which are substantially
parallel to the web, the chord being connected to the web at at least one vertex
of an angle of the chord.
- 10 2. The weight bearing element of claim 1 wherein the cross section of the at least one
chord, excluding any portion in parallel with and connected to the web, has a shape of
a regular or irregular pentagon.
3. The weight bearing element of claim 1 further comprising a fill material in the cavity
of at least one of the at least one chord.
- 15 4. The weight bearing element of claim 1 wherein the at least one chord consists of two
substantially parallel chords coupled to opposite sides of the web.
5. The weight bearing element of claim 4 wherein the chord further comprises at least 5
planar sides, each side corresponding to one side of the closed multi-sided figure of
the cross-sectional shape of the chord.
- 20 6. The weight bearing element of claim 5 wherein the number of sides is at least 6.
7. The weight bearing element of claim 5 wherein each of the at least 5 planar sides is
less than N inches thick where N is one of 1, .75, .5, .25, .125, and .1.
8. The weight bearing element of claim 5 wherein each of the at least 5 planar sides
comprises X gauge steel where X is one of 20 and 18.

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16

9. The weight bearing element of claim 5 formed by roll forming a single sheet of material into the web and at least one chord.
10. The weight bearing element of claim 1 wherein the chord is fabricated from a single continuous sheet.
- 5 11. The weight bearing element of claim 1 wherein the polygonal cross-sectional has five sides.
12. The weight bearing element of claim 1 wherein the chord has a height and a width, such that the height is greater than the width.
- 10 13. The weight bearing element of claim 1 wherein the web includes a plurality of openings having flanges formed in a trapezoidal pattern.
14. The weight bearing element of claim 13 wherein the web includes a plurality of punched out openings having flanges formed in a trapezoidal pattern.
15. A weight bearing element comprising:
an elongated back connected to two legs;
the back including a plurality of pairs of tabs spaced apart at a standard joist spacing;
each of the plurality of pairs of tabs comprising an upper tab spaced apart from a lower tab;
the back further including a plurality of stiffening members, each of which is positioned between an adjacent set of the pairs of tabs, and each of which comprises a cutout with a plurality of reinforced sides.
- 20 16. The weight bearing element of claim 15 wherein the back is continuous with the two legs, forming an elongated "C" shape.
17. The weight bearing element of claim 15 wherein the back is at least 8.5 inches high.
- 25 18. The weight bearing element of claim 15 wherein the standard joist spacing is an integer multiple of 8 inches.

AMENDED SHEET

17

19. The weight bearing element of claim 15 wherein the upper tab and the lower tab of at least one of the pairs of tabs is spaced apart by at least 8.5 inches.
20. The weight bearing element of claim 15 wherein the standard joist spacing is 8 inches.
21. The weight bearing element of claim 15 wherein the cutout has a diamond shape.
- 5 22. The weight bearing element of claim 24 wherein diamond shape has four sides, two approximately equal angles of no more than 45 degrees, and two approximately equal angles of no more than 135 degrees.
23. The weight bearing element of claim 15 wherein the reinforced sides comprise punched out portions of the back.
- 10 24. The weight bearing element of claim 15 wherein the back and two legs comprise a "C" shape, the back is at least 8.5 inches high, the standard joist spacing is an integer multiple of 8 inches, and the cutout has a diamond shape.
25. The weight bearing element of claim 15 wherein the back and legs comprise a rim band.
- 15 26. A building containing the weight bearing element according to claim 1 as a structural component.
27. A building containing the weight bearing element according to claim 15 as a structural component.
- 20 28. A building containing the weight bearing element according to claim 1 as a structural component and a weight bearing element of claim 15 as a structural component.

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